

Homebuilders Go Green

More Americans are incorporating energy-efficient technologies in their homes.

By incorporating off-the-shelf, energy-efficient technologies, homeowners and building managers could cut up to 80 percent of the cost of heating, cooling and lighting their buildings, according to the U.S. Department of Energy. The potential benefits of using these technologies in the roughly 2 million houses constructed in the United States each year is huge: Nearly 25 percent of U.S. energy consumption is used to power homes.

In 2007, two-thirds of U.S. homebuilders will "build green" in 15 percent of their projects, according to a June study by McGraw-Hill Construction. The study defines building green as going beyond accepted building codes to increase energy efficiency, conserve water, develop building lots in a way that preserves trees and uses the sun, incorporate earth-friendly materials and reduce job-site waste.

Not long ago, green houses were the province of custom builders. But no more. Pardee Homes, a large-scale builder putting up hundreds of houses in the American Southwest, conforms to high environmental standards in one-third of its projects.

Homebuilders say the biggest reason for building green is customer concern about energy costs. Gasoline prices have increased 86 percent in the last three years in the United States, according to the Bureau of Labor Statistics. Joyce Mason of Pardee says her customers live in suburbs, far from their jobs, and drive a lot. As gas prices rose and they could not easily change

their commutes, they looked to save on home energy bills. Mason says her company offers photovoltaic solar systems that might cost as much as \$18,000 but will reduce bills by about 70 percent.

The McGraw-Hill study emphasizes builders' use of passive solar heating—situating a home to maximize use of the sun's energy and planting trees to provide shade. Deciduous trees offer shade during summer and lose leaves in winter to allow sun to enter windows.

Builders also are increasingly using low-emissivity windows. According to Donald Albrecht, the lead curator of a year-long National Building Museum exhibit on green houses that opened in May 2006,

there are several types of new windows on the market that lock heat or sunscreens between layers of glass. Yet houses featured in the exhibit apply ancient principles in addition to the new technologies. For example, some have bamboo flooring because, unlike wood from hardwood forests, bamboo is a renewable, fast-growing grass.

Thermal mass, another tried-and-true construct, is evident in the thick, rammed earth walls of architect Rick Joy's Tucson Mountain House featured in the exhibit. The walls—like heat sponges—absorb heat during the day and release it at night.

A recently built green apartment building in Washington, D.C., requires no advertising, according to

designer Russell Katz, because tenants are aware of its financial benefits. "Some people think of living in a green home as being a 'do-gooder,'" says Katz. "In fact, it is business savvy: you really save money."

Katz's tenants pay less than most do for hot or cool air. During construction, Katz cut out such luxury features as marble in bathrooms and stainless steel kitchen appliances in favor of a geothermal system that pipes water from below ground (where the temperature remains a constant 18 degrees Celsius) and blows air over the pipes to heat or cool apartments. "The temperature underground doesn't cost anything," Katz says. The building also has a roof garden that insulates it and manages storm water.

Retailer Home Depot reports that individual U.S. consumers are also renovating homes to conserve. Some of the store's popular items are tank-less water heaters, which save energy and space by heating water as it is used; compact fluorescent light-bulbs, which last 10 times longer and use 66 percent less energy than standard bulbs; programmable thermostats, which save \$100 a year on energy costs when used correctly; and additional insulation, an inexpensive way to reduce energy bills.

Some office-tower builders are using the same energy-saving features that homebuilders have recently gravitated toward. "In Germany and Austria, there has been legislation to go more sustainable; as a result they are more advanced and spur innovation," says Albrecht. But citing green high-rises going up in New York City, he notes that "little by little...Americans are coming on." □

From the Bureau of International Information Programs, U.S. Department of State.



Courtesy Michelle Kaufmann Designs/National Building Museum



Courtesy Drendl Architects/National Building Museum

Above: A prefabricated home featuring green design elements. Right: The tubular skylight's glazing lets in sunlight while deflecting harmful UV rays. The house's reinforced concrete central core stores the sun's warmth.